1. A method of producing an aluminum alloy extrusion product having improved fracture toughness, the method comprising the steps of:

(a) providing a molten body of an aluminum base alloy comprised of 1.95 to 2.5 wt.% Cu, 1.9 to 2.5 wt.% Mg, 8.2 to 10 wt.% Zn, 0.05 to 0.25 wt.% Zr, max. 0.15 wt.% Si, max. 0.15 wt.% Fe, max. 0.1 wt.% Mn, the remainder aluminum and incidental elements and impurities;

(b) casting said molten body of said aluminum base alloy to provide a solidified body, said molten aluminum base alloy being cast at a rate in the range of 1 to 6 inches per minute;

(c) homogenizing said body by heating in a first temperature range of 840 to 860 °F followed by heating in a second temperature range of 860° to 880 °F to provide a homogenized body having a uniform distribution of η precipitate and zirconium containing dispersoids;

(d) extruding said homogenized body to provide an extrusion, said extruding being carried out in a temperature range of 600° to 850°F and at a rate sufficient to maintain at least 80% of the cross-sectional area of said extrusion in a non-recrystallized condition;

(e) solution heat treating said extrusion; and

(f) artificial aging said product to improve strength properties to provide an extrusion product having improved fracture toughness.

2. The method in accordance with claim 1 wherein the alloy contains 1.95 to 2.3 wt.% Cu.

3. The method in accordance with claim 1 wherein the alloy contains 1.9 to 2.3 wt.% Mg.

4. The method in accordance with claim 1 wherein the alloy contains 0.05 to 0.2 wt.% Cr.

5. The method in accordance with claim 1 wherein the alloy contains 8.45 to 9.4 wt.% Zn.

6. The method in accordance with claim 1 wherein the alloy contains 0.01 to 0.1 wt.% Sc.

7. The method in accordance with claim 1 wherein the alloy contains 0.01 to 0.2 wt.% Ti.

8. The method in accordance with claim 1 including heating in said first temperature range for 6 to 18 hours.

9. The method in accordance with claim 1 including heating in said second temperature range for 4 to 36 hours.

10. The method in accordance with claim 1 including rapidly quenching said extrusion.

11. The method in accordance with claim 1 wherein said extruding is carried out at a rate in the range of 0.5 to 8 ft/min.

12. The method in accordance with claim 1 wherein said solution heat treating is carried out in a temperature range of 870° to 890°F for 5 to 120 minutes.

13. The method in accordance with claim 1 wherein said artificial aging is carried out by aging in a temperature range of 175° to 300°F for 3 to 30 hours followed by aging at 280° to 360°F for 3 to 24 hours.

14. The method in accordance with claim 1 wherein said artificial aging is carried out by aging in a temperature range of 210° to 280°F for 4 to 24 hours followed by aging at 320° to 400°F for 30 minutes to 14 hours.

15. The method in accordance with claim 1 wherein said artificial aging is carried out by aging in a temperature range of 150° to 325°F for 2 to 30 hours followed by aging at 300° to 500°F for 5 minutes to 3 hours followed by aging at 175° to 325°F for 2 to 30 hours.

16. The method in accordance with claim 1 wherein said artificial aging is a three-step process wherein said first and third steps improve strength and a second step improves corrosion resistance.

17. The method in accordance with claim 1 wherein said artificial aging includes aging: (i) at a low temperature above room temperature to precipitation harden said extrusion; (ii) at temperatures to improve corrosion resistance properties of said extrusion; and (iii) at lower temperatures above room temperature to precipitation harden said extrusion.

18. The method in accordance with claim 1 wherein the extrusion has a fracture toughness at least 5% greater than a similar extrusion fabricated from 7075 alloy.

19. The method in accordance with claim 1 wherein the extrusion has a tensile strength at least 8% greater than a similar extrusion fabricated from 7075 alloy.

20. A method of producing an aluminum alloy extrusion product having improved strength and fracture toughness, the method comprising the steps of:

(a) providing a molten body of an aluminum base alloy comprised of 1.95 to 2.3 wt.% Cu, 1.9 to 2.3 wt.% Mg, 8.2 to 9.4 wt.% Zn, 0.05 to 0.2 wt.% Cr, 0.05 to 0.15 wt.% Zr, max. 0.15 wt.% Si, max. 0.15 wt.% Fe, max. 0.1 wt.% Mn, the remainder aluminum and incidental elements and impurities;

(b) casting said molten body of said aluminum base alloy to provide a solidified body, said molten aluminum base alloy being cast at a rate in the range of 1 to 6 inches per minute;

(c) homogenizing said body by heating in a first temperature range of 840° to 860°F for 6 to 24 hours followed by heating in a second temperature range of 860° to 880 °F for 4 to 36 hours to provide a homogenized body having a uniform distribution of η precipitate and zirconium and chromium containing dispersoids;

(d) extruding said homogenized body to provide an extrusion, said extruding being carried out in a temperature range of 600° to 850°F and at a rate in the range of 0.5 to 8.0 ft/min to provide an extrusion with the non-recrystallized area representing at least 80% of the cross sectional area of the extrusion;

(e) rapidly quenching said extrusion;

(f) solution heat treating said extrusion; and

(g) artificial aging said product to improve strength properties to provide an extrusion product having improved fracture toughness.

21. The method in accordance with claim 20 wherein the alloy contains 0.01 to 0.1 wt.% Sc.

22. The method in accordance with claim 20 wherein the alloy contains 0.01 to 0.2 wt.% Ti.

23. The method in accordance with claim 20 wherein said solution heat treating is carried out in a temperature range of 870° to 890°F for 5 to 120 minutes.

24. The method in accordance with claim 20 wherein said artificial aging is carried out by aging in a temperature range of 175° to 300°F for 3 to 30 hours followed by aging at 280° to 360°F for 3 to 24 hours.

25. The method in accordance with claim 20 wherein said artificial aging is carried out by aging in a temperature range of 245° to 255°F for 6 to 24 hours followed by aging at 360° to 390°F for 5 to 120 minutes.

26. The method in accordance with claim 20 wherein said artificial aging is a three-step process wherein said first and third steps improve strength and a second step improves corrosion resistance.

27. The method in accordance with claim 20 wherein said artificial aging includes aging: (i) at a low temperature above room temperature to precipitation harden said extrusion; (ii) at temperatures to improve corrosion resistance properties of said extrusion; and (iii) at lower temperatures above room temperature to precipitation harden said extrusion.

28. The method in accordance with claim 20 wherein the extrusion has a fracture toughness at least 5% greater than a similar extrusion fabricated from 7075 alloy.

29. The method in accordance with claim 20 wherein said artificial aging is carried out by aging in a temperature range of 150° to 325°F for 2 to 30 hours followed by aging at 300° to 500°F for 5 minutes to 3 hours followed by aging at 175° to 325°F for 2 to 30 hours.

30. A method of producing an aluminum alloy extrusion product having improved strength and fracture toughness, the method comprising the steps of:

(a) providing a molten body of an aluminum base alloy comprised of 1.95 to 2.5 wt.% Cu, 1.9 to 2.5 wt.% Mg, 8.2 to 10 wt.% Zn, 0.05 to 0.25 wt.% Zr, max. 0.15 wt.% Si, max. 0.15 wt.% Fe, max. 0.1 wt.% Mn, the remainder aluminum and incidental elements and impurities;

(b) casting said molten body of said aluminum base alloy to provide a solidified body, said molten aluminum base alloy being cast at a rate in the range of 1 to 4 inches per minute;

(c) homogenizing said body to provide a homogenized body having a uniform distribution of η precipitate;

(d) extruding said homogenized body to provide an extrusion, said extruding being carried out in a temperature range of 600° to 850°F at an extrusion ratio in the range of 10 to 60 and an extrusion rate in the range of 0.5 to 8.0 ft/min to provide said extrusion in a substantially non-recrystallized condition;

(e) rapidly quenching said extrusion;

(f) solution heat treating said extrusion; and

(g) artificial aging said product to improve strength properties to provide an extrusion product having improved fracture toughness.

31. The method in accordance with claim 30 wherein the alloy contains 0.05 to 0.2 wt.% Cr.

32. The method in accordance with claim 30 wherein the alloy contains 0.01 to 0.2 wt.% Ti.

33. The method in accordance with claim 30 wherein the alloy contains 0.01 to 0.2 wt.% Sc.

34. The method in accordance with claim 30 wherein said solution heat treating is carried out in a temperature range of 875° to 885°F for 5 to 120 minutes.

35. The method in accordance with claim 30 wherein said artificial aging is carried out by aging in a temperature range of 175° to 300°F for 3 to 30 hours followed by aging at 280° to 360°F for 3 to 24 hours.

36. The method in accordance with claim 30 wherein said artificial aging is carried out by aging in a temperature range of 210° to 280 °F for 4 to 24 hours followed by aging at 300° to 400°F for 1 to 14 hours.

37. The method in accordance with claim 30 wherein said artificial aging includes aging: (i) at a low temperature above room temperature to precipitation harden said extrusion; (ii) at temperatures to improve corrosion resistance properties of said extrusion; and (iii) at lower temperatures above room temperature to precipitation harden said extrusion.

38. The method in accordance with claim 30 wherein said artificial aging is carried out by aging in a temperature range of 150° to 325°F for 2 to 30 hours followed by aging at 300° to 500°F for 5 minutes to 3 hours followed by aging at 175° to 325°F for 2 to 30 hours.

39. An improved aluminum base alloy wrought product consisting essentially of 1.95 to 2.5 wt.% Cu, 1.9 to 2.5 wt.% Mg, 8.2 to 10 wt.% Zn, 0.05 to 0.25 wt.% Zr, max. 0.15 wt.% Si, max. 0.15 wt.% Fe, max. 0.1 wt.% Mn, the remainder aluminum and incidental elements and impurities, said alloy product having a fracture toughness of 5% or greater and a yield strength of 8% or greater than a similarly sized 7075 product.

40. The alloy product in accordance with claim 39 wherein the alloy contains 1.95 to 2.3 wt.% Cu.

41. The alloy product in accordance with claim 39 wherein the alloy contains 1.9 to 2.3 wt.% Mg.

42. The alloy product in accordance with claim 39 wherein the alloy contains 0.05 to 0.2 wt.% Cr.

43. The alloy product in accordance with claim 39 wherein the alloy contains 8.45 to 9.4 wt.% Zn.

44. The alloy product in accordance with claim 39 wherein the alloy contains 0.01 to 0.2 wt.% Sc.

45. The alloy product in accordance with claim 39 wherein the alloy contains 0.01 to 0.2 wt.% Ti.

46. The alloy product in accordance with claim 39 wherein said product is an extrusion product.

47. The alloy product in accordance with claim 39 wherein the alloy product is an extrusion having an aspect ratio between the thinnest and the thickest section of 1:4 to 1:18.

48. The alloy product in accordance with claim 39 wherein said product is an aircraft stringer.

49. The alloy product in accordance with claim 39 wherein said product is an aircraft floor beam.

50. The alloy product in accordance with claim 39 wherein said product is an aircraft fuselage beam.

51. The alloy product in accordance with claim 39 wherein said product is a hollow extruded product.

52. The alloy product in accordance with claim 39 wherein said product is a hollow non-seamless extruded product.

53. The alloy product in accordance with claim 39 wherein said product is a hollow seamless extruded product.

54. The alloy product in accordance with claim 39 wherein said product is a baseball bat.

55. The alloy product in accordance with claim 39 wherein said product is an automobile rocker arm.

56. An improved aluminum base alloy wrought product consisting essentially of 1.95 to 2.5 wt.% Cu, 1.9 to 2.5 wt.% Mg, 8.2 to 10 wt.% Zn, 0.05 to 0.25 wt.% Zr, 0.05 to 0.2 wt.% Sc, max 0.15 wt.% Si, max. 0.15 wt.% Fe, max. 0.1 wt.% Mn, the remainder aluminum and incidental elements and impurities.

57. The alloy product in accordance with claim 56 wherein the alloy contains 0.05 to 0.2 wt.% Cr.

58. The alloy product in accordance with claim 56 wherein the alloy contains 0.05 to 0.2 wt.% Ti.

59. An improved aluminum base alloy wrought product consisting essentially of 1.95 to 2.5 wt.% Cu, 1.9 to 2.5 wt.% Mg, 8.2 to 10 wt.% Zn, 0.05 to 0.25 wt.% Zr, max. 0.15 wt.% Si, max. 0.15 wt.% Fe, max. 0.1 wt.% Mn, the remainder aluminum and incidental elements and impurities, said alloy product having a fracture toughness of 5% or greater, a yield strength of 8% or greater than a similarly sized 7075 product and having an exfoliation resistance of EB or better.

60. An improved aluminum base alloy aircraft member consisting essentially of 1.95 to 2.5 wt.% Cu, 1.9 to 2.5 wt.% Mg, 8.2 to 10 wt.% Zn, 0.05 to 0.25 wt.% Zr, max. 0.15 wt.% Si, max. 0.15 wt.% Fe, max. 0.1 wt.% Mn, the remainder aluminum and incidental elements and impurities, said alloy product having a fracture toughness of 5% or greater and a yield strength of 8% or greater than a similarly sized 7075 product.

61. The alloy product in accordance with claim 60 wherein said member is an aircraft stringer.

62. The alloy product in accordance with claim 60 wherein said member is an aircraft floor beam.

63. The alloy product in accordance with claim 60 wherein said member is an aircraft fuselage beam.

64. An improved aluminum base alloy aircraft member consisting essentially of 1.95 to 2.5 wt.% Cu, 1.9 to 2.5 wt.% Mg, 8.2 to 10 wt.% Zn, 0.05 to 0.25 wt.% Zr, max. 0.15 wt.% Si, max. 0.15 wt.% Fe, max. 0.1 wt.% Mn, the remainder aluminum and incidental elements and impurities, said alloy product having a fracture toughness of 5% or greater, a yield strength of 8% or greater than a similarly sized 7075 product and having an exfoliation resistance of EB or better.